

THE MINERAL INDUSTRY OF

TRINIDAD AND TOBAGO

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Trinidad and Tobago's gross domestic product (GDP) increased by 5.1% in 1999 with significant increases in the construction (7.8%), distribution (7.0%), petroleum (8.0%), and transport, storage, and communication sectors (9.3%). The petroleum sector outpaced the general growth of the economy with an increase of 8% that has been induced by a 17.8% increase in the petrochemical subsector (Central Bank of Trinidad and Tobago, 2000, p. 3).

The petroleum sector, which continued to dominate Trinidad and Tobago's economy, represented 21% of GDP (Central Bank of Trinidad and Tobago, 2000, p. 36), 20% of Government revenue, (Central Bank of Trinidad and Tobago, 2000, p. 45), and 54% of total export value (Central Bank of Trinidad and Tobago, 2000, p. 64). The 2% increase in the production of crude petroleum reversed the recent declining trend. Production of natural gas continued its fast-paced ascent with a 28.6% increase in 1999 and a 65.6% increase since 1995. Owing to Trinidad and Tobago's abundance of natural gas reserves, the country has become an important producer of ammonia and became the world's leading exporter in 1999. Proven reserves of natural gas reached 604.6 billion cubic meters by yearend 1999 (Ministry of Energy and Energy Industries, May 24, 2000, Reserves (as at January 1, 2000), accessed on August 30, 2000, at URL <http://www.energy.gov.tt/reserves>). In addition to an expanding ammonia production capacity, which uses natural gas for energy and feed material, Trinidad and Tobago's other petrochemical industries and the iron and steel sector have benefitted from the availability of inexpensive natural gas.

Other mineral commodities produced in Trinidad and Tobago were asphalt, cement, direct-reduced iron (DRI), limestone, natural gas liquids, and sulfur (table 1). A large portion of the production of these commodities was for export. In 1999, 100% of the production of asphalt, 92% of the production of petroleum refinery products, 92% of the production of wire rod, 91% of the production of fertilizers, 79% of the production of natural gas liquids, and 50% of the production of cement was exported (Central Bank of Trinidad and Tobago, 2000, p. 39-40). The United States, which was Trinidad and Tobago's main trading partner, received 39.3% of Trinidad and Tobago's total exports and provided 39.8% of its total imports. Actual and planned U.S. investment in Trinidad and Tobago between 1996-1999 was estimated to be \$4 billion (U.S. Embassy, Port of Spain, Trinidad and Tobago, 1998). Most of the U.S. investment was in the petrochemical and petroleum sectors. Production of mineral commodities in Trinidad and Tobago was by the Government and the private sector (table 2).

Production of cement by Trinidad Cement Ltd., Trinidad and Tobago's sole producer, decreased slightly to 688,400 metric

tons (t) from 690,400 t in 1998. Domestic sales decreased by 4.8% to 348,800 t, and exports increased by 6.7% to 341,600 t (Central Bank of Trinidad and Tobago, 2000, p. 40).

Steel was produced by an integrated minimill owned by Caribbean Ispat Limited (CIL), a subsidiary of Ispat International N.V. Production of crude steel, billets, and wire rods decreased. Production of DRI increased by 26% to almost 1.3 million metric tons (Mt). This still represented only about 49.7% of CIL's DRI capacity of 2.6 Mt. Exports of DRI increased by almost 1.5 times of those of 1998 to 521,700 t (Central Bank of Trinidad and Tobago, 2000, p. 40).

Production of iron carbide at Nucor Iron Carbide Inc. plant in Point Lisas, which began operations in 1994, was suspended in 1999 (Nucor Corporation, 1999, p. 3). The plant, designed to produce 300,000 metric tons per year (t/yr) as a replacement for DRI, was only producing 120,000 t/yr (Central Bank of Trinidad and Tobago, January 23, 2000, Key Events, accessed September 1, 2000, at URL <http://central-bank.org.tt/md/econoevents/keevents99.html>).

Production of petroleum in Trinidad and Tobago was by the Government-owned Petroleum Company of Trinidad and Tobago Ltd. (Petrotrin) and by the private sector represented by BP Amoco Energy Company of Trinidad and Tobago Limited, which was the new company that resulted from the merge in 1998 of BP and Amoco International Oil Co. Ltd.; Trinmar Ltd., a joint venture between Petrotrin and Texaco Trinidad Inc.; Trinidad and Tobago Marine Petroleum Company (Trintomar), a joint venture with the National Gas Co., Enron Oil and Gas Trinidad Ltd. (Enron); and Mora Oil Ventures. About 44% of total crude petroleum was produced by BP Amoco Energy, followed by Trinmar with 29% and Petrotrin with 19% (Ministry of Energy and Energy Industries, May 4, 2000, Daily oil production by company (bodp) 1997-1999, accessed August 30, 2000, at URL <http://www.energy.gov.tt/oilproduction>).

In 1999, production of crude petroleum increased by 2%. This was the first increase in recent years. Production of refinery products climbed by 8.1%. Petroleum reserves at yearend 1999 totaled 685.9 million barrels (Mbbbl). Of this total, almost 71% was offshore. Offshore reserves increased by almost 23% to 485.7 Mbbbl in 1999 from 396.0 Mbbbl in 1998 (Ministry of Energy and Energy Industries, May 24, 2000, Reserves (as at January 1, 2000), accessed August 30, 2000, at URL <http://www.energy.gov.tt/reserves>).

Production of natural gas, the driving force behind the rapid development of the petrochemical manufacturing sector in Trinidad and Tobago, increased by 28.6%. The three leading producers during the year were BP Amoco Energy (74%), British Gas Trinidad (11.4%), and Enron (9.4%) (Ministry of Energy and

Energy Industries, 2000, Natural gas production 1999, accessed on August 30, 2000, at URL <http://www.energy.gov.tt/gasproduction>).

Other international companies were investing or were considering future investment in Trinidad and Tobago because of its natural gas resources. At yearend 1998, Norsk Hydro ASA of Norway signed a preliminary agreement with the Government of Trinidad and Tobago for a \$2.5 billion 474,000-t aluminum smelter, which included a dedicated powerplant (Sköld, 1998). Norsk Hydro also secured a long-term contract with National Gas Company to supply the natural gas needs for the smelter. Because of falling commodity prices, Norsk Hydro put the construction of the smelter on hold in early 1999. The company, however, indicated that it still had plans to build an aluminum plant in Trinidad and Tobago (Norsk Hydro ASA, 1999).

Production of liquefied natural gas (LNG) from Atlantic LNG Company of Trinidad and Tobago, the first LNG plant in Trinidad and Tobago, began in April 1999. The \$1 billion 3-Mt plant, located in Port Fortin in southwestern Trinidad, was built by Bechtel Overseas, Inc., and uses the Phillips Optimized Cascade LNG process developed by Phillips Petroleum Company. The plant, which is on a 120-acre site, has its own harbor and jetty that can accommodate from 70,000- to 135,000-cubic-meter LNG tankers (Atlantic LNG Company of Trinidad and Tobago, [1999], The LNG project, accessed August 30, 2000, at URL http://atlanticlng.com/au_lng.html). Even before production began, there were reports that Atlantic LNG was planning to triple capacity to 9 Mt by 2003.

On September 9, the \$100 million, 225-megawatt (MW) natural gas-fueled powerplant of InnGOGEN, a subsidiary of U.S. York Research Corporation, began commercial operation (York Research Corporation, 1999). Most of the company's 195-MW output was to be sold to Trinidad and Tobago Electricity Commission (T&TEC), the Government's distribution company, under a 30-year agreement. All power generation in Trinidad and Tobago had been the responsibility of T&TEC until 1994 when the Government sold 49% of its assets on Trinidad (not Tobago) to Southern Electrical International and Amoco Business Development and formed the Power Generating Company of Trinidad and Tobago (PowerGen) (Washington Times, 1999). PowerGen, which had generating facilities in

Penal, Point Lisas (the largest), and Port of Spain, had a capacity of 1,178 MW (Ministry of Energy and Energy Industries, 2000, Electrical Power Industry, accessed on August 30, 2000, at <http://www.energy.gov.tt/power>).

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- York Research Corporation, 1999, Commercial operation of 225 MW \$100 million power plant in Trinidad and Tobago: York Research Corporation press release, September 13, 1 p.

Major Sources of Information

- Ministry of Energy and Energy Industries
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Republic of Trinidad and Tobago
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- Central Bank of Trinidad and Tobago
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TABLE 1
TRINIDAD AND TOBAGO: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1995	1996	1997	1998	1999
Asphalt, natural		20,000 2/	18,100 2/	15,396 3/	18,735 3/	12,600 2/
Cement, hydraulic: 2/		558,500	617,100	652,500	690,400	688,400
Gas, natural 2/						
Gross	million cubic meters	7,996	7,127	9,137	10,294	13,240
Marketed	do.	6,119	7,049	7,379	8,651	9,348
Iron and steel:						
Direct-reduced iron 2/		1,039,900	954,500	1,133,800	1,023,100	1,293,000
Steel, crude		738,000	695,000	736,000	781,425	729,000
Semimanufactures (billets) 2/		676,100	643,600	747,000	776,900	723,900
Lead, refined (secondary) e/		1,600	1,600	1,600	1,600	1,600
Natural gas liquids	thousand 42-gallon barrels	3,747 2/	4,460 2/	4,113 3/	5,254 3/	5,753 2/
Nitrogen, N content of ammonia 4/	thousand tons	1,696	1,801	1,772	2,271	2,720
Petroleum:						
Crude	thousand 42-gallon barrels	48,111 2/	47,171 2/	45,166 3/	44,759 3/	45,662 2/
Refinery products	do.	34,391 2/	41,067 2/	33,525 3/	49,019 3/	53,320 2/
Stone, limestone	thousand tons	1,600 e/	1,600 e/	1,219	1,100	1,100 e/
Sulfur, byproduct of petroleum e/ 5/		5,000	5,000	15,000	15,000	15,000

e/ Estimated. -- Zero.

1/ Table includes data available through August 2, 2000.

2/ Source: Central Bank of Trinidad and Tobago Annual Economic Survey.

3/ Source: Ministry of Energy and Energy Industries.

4/ Source: International Fertilizer Industry Association.

5/ Sulfur as a byproduct of natural gas may be produced, but information is inadequate for reliable output estimates.

TABLE 2
TRINIDAD AND TOBAGO: STRUCTURE OF THE MINERAL INDUSTRY IN 1999

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity holders	Location of main facilities	Annual capacity
Anhydrous ammonia	Tringen I	Point Lisas, Caroni Co.	500.
Do.	Tringen II (Norsk Hydro ASA, 49%; Government, 51%):	do.	454.
Do.	PCS Nitrogen Trinidad Limited (Potash Corp. of Saskatchewan (PCS), 100%)	do. (four plants)	1,758.
Do.	Farmland MissChem Limited (Farmland Industries Inc., 50%; and Mississippi Chemical Corp., 50%)	La Brea, St Patrick Co.	600.
Do.	Hydro Agri Trinidad Ltd. (Norsk Hydro ASA, 100%)	do.	227.
Asphalt	Lake Asphalt of Trinidad and Tobago (1978) Ltd. (Government, 100%)	Brighton, St. Patrick Co.	60.
Cement	Trinidad Cement Ltd. (Cemex of Mexico, 20%; Government, 80%)	Claxton Bay, Caroni Co.	700.
Iron and steel	Caribbean Ispat Limited (Ispat International N.V., 100%)	Point Lisas, Caroni Co.	2,600 DRI, 1,000 steel, 700 wire rod.
Do.	Nucor Iron Carbide Inc. [Nucor Corporation (U.S.), 80%; Samitri, Brazil, 20%]	do.	320 iron carbide. 1/
Liquefied natural gas	Atlantic LNG Company of Trinidad and Tobago [BP Amoco Trinidad (LNG) B.V., 34%; British Gas LNG Limited, 26%; Repsol LNG Port Spain B.V., 20%; Cabot Trinidad LNG Limited, 10%; National Gas Company of Trinidad and Tobago, 10%]	Point Fortin	3,000
Petroleum:			
Crude	BP Amoco Energy Company of Trinidad and Tobago Limited	Banyan, Cassia, Flambouyant, Immortelle, Poui, Samaan, and Teak	60,000. 2/
Do.	Petroleum Company of Trinidad and Tobago Ltd. (Petrotrin) (Government, 100%)	Various	30,000. 2/
Do.	Petrotrin, 66.66%, Trinmar Ltd. (Texaco Trinidad Inc, 33.33%;	Soldado fields, offshore in Gulf of Paria	40,000. 2/
Products	Petrotrin (Government, 100%)	Point-a-Pierre, Victoria Co.	160,000. 2/
Sulfur	do.	do.	67.

1/ Production suspended in 1999.

2/ Barrels per day